

rack aisles suitable for receiving loads;

vertical conveyors disposed at said front ends of said plurality of rack bays, having a floor that can be driven up and down; and

a lifting/pushing system for displacing the loads sideways into and out of said rack compartments and said vertical conveyor, wherein said system has a lower zone and is provided in conjunction with said movable transport devices.--

#### REMARKS

Reconsideration of this patent application is respectfully requested in view of the foregoing amendments and the following remarks.

The Examiner has rejected claims 21-34 under 35 U.S.C. 112, second paragraph as being indefinite for failing to particularly point out the invention. Claims 21-23 and 25-34 have been amended to more clearly set forth the invention. Claim 24 has been canceled without prejudice and new independent claim 35 has been added.

The Examiner has rejected claims 21-34 under 35 U.S.C. 103(a) as being unpatentable over *Kita et al.*

*Kita* shows a charging/delivering device 56 in Figs. 17-19. This embodiment including the support plates 63, prevent the apparatus and goods from being driven through the rack as shown in fig. 17 to an identical rack being placed for example behind the rack shown in fig. 17. The present invention described in claims 21 and 35 (compare fig. 1) has a number of racks which all can be reached by the loading track 4. Therefore, the loading track 4 extends along the face sides of the rack bays, namely a number of rack bays and not only one rack bay as it is in *Kita* (compare description at the top of fig. 12 of the present application).

In the present application, as claimed in claims 21, 35 and 36, the vertical conveyor differs from the cited references and is shown in fig. 3 and described on page 13 of our application. The vertical conveyor substantially comprises a floor and can be driven up and down. In claims 21 and 35 as well as at the bottom of page 18 and the top of page 19 it is described, that the load can be brought to the lowered lifting device of the desired transport device. The other vertical conveyors 6, which are not to be loaded at that moment are in a waiting position at the

level of the first or second rack so that transport devices are capable of driving on the loading track 4 without obstruction up to the desired vertical conveyor.

The Examiner has rejected claims 21-23 under 35 U.S.C. 103(a) as being unpatentable over *Chiantella et al.* The Examiner has also rejected claims 24-34 under 35 U.S.C. 103(a) as being unpatentable over *Chiantella et al* in view of *Kita et al.*

Regarding *Chiantella*, an elevator is placed between the racks as shown in figs. 7 and 8. In contrast, the vertical conveyor of the present invention is not placed between two racks but at the head of a rack as described in claims 21 and 35. Thus, it is not placed in a lane or a path between the racks. Furthermore, in *Chiantella*, the elevator transports the load together with a bearing truck. In contrast, in the present invention the load in the vertical conveyor is deposited to and removed from the vertical conveyor in the same way as a load in a rack compartment, as described in claims 21 and 35. The load is taken out of the vertical conveyor and given to a transport device that runs in the rack aisles only.

Claims 24, 30 and 32 have been canceled without prejudice, claims 21-23, 24-29, 31, 32, and 34 have been amended, and claim

35 has been added. No new matter has been added. Accordingly, the Applicant submits that the claims as presented are patentable over the references cited, taken either singly or in combination.

Early allowance of the amended claims is respectfully requested.

Respectfully submitted,

Johann Walter GROND

COLLARD & ROE, P.C.  
1077 Northern Boulevard  
Roslyn, New York 11576  
(516) 365-9802

ERF:mh

Enclosure: Marked Up Copy of Amended Claims

I hereby certify that this correspondence is being sent by facsimile transmission to the U.S.P.T.O. to Patent Examiner F. Werner, Group 3652 to 1-703-872-9326 on December 19, 2002.

  
Mary Hennessy

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SERIAL NO. 09/868,090  
EXAMINER: F. WERNER  
GROUP: 3652  
CONF NO.: 5638

MARKED-UP COPY OF  
AMENDED CLAIMS

21. (Amended) A method of loading and unloading loads in ~~the~~ a rack storage warehouse comprising a plurality of rack bays having a plurality of rack levels, and each rack level having a plurality of rack compartments, as well as a plurality of (1) and rack aisles ~~(2)~~ located between the rack bays ~~(1)~~ of racks, method of loading and unloading comprising the steps:

(a) transporting that a the load (10) is ~~transported at a face side of a rack bay (1)~~ via a transport device in a first horizontal direction along a loading track that extends along front ends of the plurality of rack bays to a vertical conveyor (6) at a front end of a target rack bay;

(b) depositing the load on said vertical conveyor via a lifting/pushing device on said transport device;

(bc) transporting that the load (10) is ~~transported at the face side of the rack bay (1)~~ in the a first vertical direction via said vertical conveyor up said front end of said target rack bay to a target rack level;

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(ed) removing that the load is transported from  
said vertical conveyor via a lifting pushing device on a  
transport device in one of the rack aisles at the said target  
rack level in the horizontal direction in the rack aisle, whereby  
the load in the vertical conveyor (6) is treated the same way as  
a load in the rack;

(de) transporting that the load (10) is  
transported in the a second horizontal direction in the rack  
aisle via said transport device movable on guiding elements  
associated with each individual level of the rack bays, (2) up to  
a target rack compartment location at the in said respective  
target rack level; and

(ef) transporting that the load (10) is  
transported in the a third horizontal direction from the rack  
aisle (2) into the said target rack compartment via said lifting  
and pushing device of said transport device, capable of lifting  
the load over a small distance; and

(g) depositing the load in said target rack

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compartment via said lifting and pushing device.

22. (Amended) The method according to claim 21,  
~~characterized in that~~ wherein during the unloading of loads ~~(10)~~,  
the steps a, b, c, d, e, f, and g ~~(a) to (e)~~ are ~~carried out~~  
performed accordingly in the reverse order.

23. (Amended) The method according to claim 21,  
~~characterized in that~~ wherein each ~~change-transporting step, in~~  
~~direction~~ during the transport of the load ~~(10)~~ is carried out at  
an angle of 90° from the previous transporting step.

25. (Amended) The storage system according to claim 35 24,  
~~characterized in that~~ wherein said the system for displacing the  
loads sideways into the racks is ~~formed by~~ a lifting and pushing  
system ~~(12)~~.

26. (Amended) The storage system according to claim 35 24,  
~~characterized in that~~ wherein said vertical conveyors provision  
~~is made at the ends of the rack bays (2) for lifting devices by~~  
~~means of which~~ lift the loads ~~can be lifted to said transport~~  
devices on said plurality of the guiding elements ~~(16)~~ in said

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plurality of rack aisles.

27. (Amended) The storage system according to claim 35 24, ~~characterized in that~~ further comprising a plurality of rack elements ~~(27)~~ are associated with that span said plurality of rack aisles and are secured on said plurality of rack compartments on each of said plurality of rack levels and comprise transverse struts of the rack bays, wherein said (11) ~~and that the~~ guiding elements ~~(16)~~ are integrated in the said rack elements ~~(27)~~.

28. (Amended) The storage system according to claim 35 24, ~~characterized in that the~~ wherein said lifting systems vertical conveyors and ~~the~~ said transport devices can be driven by means of pulling systems.

29. (Amended) The storage system according to claim 35 24, ~~characterized in that~~ further comprising two transport devices ~~provision is made disposed in the said rack aisles (2) for two transport devices (11), wherein said transport devices being are~~ connected with each other.



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31. (Amended) The ~~transport device storage system~~ according to claim ~~30~~ 35, ~~characterized in that the transport device (11)~~ comprises wherein said transport devices comprise rollers ~~(18)~~ having a running surface adapted to the shape of ~~the~~ said guiding element.

33. (Amended) The ~~lifting and pushing storage system~~ according to claim ~~32~~ 35, ~~characterized in that in the lower zone, the lifting and pushing system (12) comprises wherein said~~ lifting/pushing system comprises running wheels ~~(2)~~ in said lower zone, and ~~a~~ wherein said lifting system ~~acting acts~~ acts in the ~~an~~ upward direction, so that loads can be raised and ~~the a~~ force of the load weight acts on ~~the a~~ floor.

34. (Amended) The ~~lifting and pushing storage system~~ according to claim ~~32~~ 33, ~~characterized in that the lifting and pushing system (12) comprises wherein said lifting/pushing system~~ further comprises a plurality of lifting bars ~~(24)~~ for raising a lifting component ~~(23)~~ wherein said lifting bars ~~being are~~ provided within the range of ~~the~~ said running wheels ~~(22)~~.